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SPEC NOTE: **Henry® Pro-Grade® 988 Silicone Roof Coating for Existing Metal Roofs.** This specification is ideally suited for the protection and maintenance of existing coated and non-coated metal roofing including steel, aged galvanized steel, aluminum, and copper to extend the life of the roofing assembly.

SPEC NOTE: This specification is not intended for application over Kynar® or Hylar® coated metal roofs.

SPEC NOTE: This document includes Henry notes to assist the architect/specification writer. A Henry “SPEC NOTE” immediately precedes the text to which it is referring. The section is a guideline; modify to meet specific project requirements. Delete spec notes in the final copy of the specification.

SPEC NOTE: Contact Henry technical services at (800) 486-1278 for previously coated roofs.

SPEC NOTE: Pro-Grade 988 Silicone Roof Coating discussed in this specification is not recommended for use on cold storage or cryogenic structures due to constant high water vapor drive causing long-term accumulation of moisture in the insulation. Consult Henry for vapor retardant systems to use on refrigerated structures.

SPEC NOTE: Use extreme caution when applying and walking on coated surfaces. Coated surfaces are extremely slippery and can create a fall hazard resulting in injury or death.

SPEC NOTE: Coverage rates indicated in guide specifications do not include material calculations for waste.

SPEC NOTE: Metal roofing assemblies equal to or lighter than 28 gauge (0.015 inches) may be ineligible for Gold Seal Warranty issuance. Contact Henry prior to roof coating application.

SPEC NOTE: Contact Henry sales representative for a list of required documents and procedures prior to material purchase. Warranties submitted without required documents and procedures completed may result in delay or rejection of warranty request.

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**SECTION 07 01 60**

**MAINTENANCE OF FLASHING AND SHEET METAL**

1. **GENERAL**
	1. SUMMARY
		1. This Section Includes
			1. Silicone roof coating over existing metal roofs
		2. Related Requirements
			1. Section 07 01 90 – Maintenance of Joint Protection
	2. REFERENCES
		1. Reference Standards
			1. American Society for Testing and Materials (ASTM):
				1. ASTM D1549 – Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer
				2. ASTM D7281 – Standard Test Method for Determining Water Migration Resistance Through Roof Membranes
				3. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings
				4. ASTM G154 – Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials
			2. Factory Mutual (FM):
				1. FM Approvals 4470 – Single-Ply, Polymer-Modified Bitumen Sheet, Built-Up Roof (BUR) and Liquid Applied Roof Assemblies for Use in Class 1 and Noncombustible Roof Deck Construction
			3. Miami-Dade County Product Control
				1. Miami-Dade County Approved; Notice of Acceptance (NOA)
			4. Dirt Pick-Up Resistance
				1. MOT P-14 – Dirt Pickup Resistance
			5. National Sanitation Foundation (NSF):
				1. Protocol P151 Health Effects from Rainwater Catchment System Components
			6. Underwriters Laboratories (UL):
				1. UL 790 – Standard Test Methods for Fire Tests of Roof Coverings
	3. ADMINISTRATIVE REQUIREMENTS
		1. Coordination
			1. Do not allow access to installation areas by other trades during roof coating installation.
		2. Pre-bid Meeting
			1. Manufacturer representative interested in submitting a bid are required to attend a pre-bid conference 10 days prior to bid opening.
			2. Substitution limitations
				1. Submit a Roof Coating Manufacturer certification letter during the pre-bid meeting, signed by an officer of the manufacturer, stating alternative material is equivalent to the specified product.
				2. Submit independent laboratory testing information verifying physical properties meet the specified performance criteria.
				3. Products accepted as equal to the specified product will be considered an alternate and presented as a bid addendum 5 days prior to bid opening.
				4. No changes or substitutions to the specified product will be accepted after bid opening.
		3. Pre-installation Meetings
			1. Review installation and coordination requirements for warranty eligibility prior to pre-applied roof coating installation.
	4. SUBMITTALS
		1. Provide submittals in accordance with Section 01 33 00 Submittal Procedures.
		2. Action Submittals
			1. Product data
				1. Guide specification
				2. Safety data sheets
				3. Standard details
				4. Technical data sheets
			2. Certificates
				1. Certification stating assembly components are supplied and warranted by single source Manufacturer.
				2. Certification stating Roof Coating Manufacturer meets the following standards:

Part of a single source manufacturer for roof coatings, Spray Polyurethane Foam (SPF), and EPDM, TPO, PVC roofing systems.

Incorporates a national manufacturing and production capabilities program including supply chain procurement teams and logistics management.

Each manufacturing facility must implement a full-time quality control and oversight operating system.

Participates in the Global Environmental, Social, and Governance (ESG) program to achieve Net Zero greenhouse gas emissions across the entire value chain by 2050.

* + - * 1. Sarbanes-Oxley Act (SOX) compliant with public access to published annual report.
				2. Statement stating Installer is authorized by Roof Coating Manufacturer to complete Work as specified.
	1. QUALITY ASSURANCE
		1. Qualifications
			1. Manufacturer qualifications:
				1. Minimum of 20 years of experience in production and sales of roof coatings.
				2. Part of a single source manufacturer for roof coatings, Spray Polyurethane Foam (SPF), and EPDM, TPO, PVC roofing systems.
				3. Incorporates a national manufacturing and production capabilities program including supply chain procurement teams and logistics management.
				4. Each manufacturing facility must implement a full-time quality control and oversight operating system.
				5. Participates in the Global Environmental, Social, and Governance (ESG) program to achieve Net Zero greenhouse gas emissions across the entire value chain by 2050.
				6. Sarbanes-Oxley Act (SOX) compliant with public access to published annual report.
			2. Installer qualifications
				1. Authorized by Roof Coating Manufacturer to complete Work as specified.
				2. 5 years minimum of experience in Work as described in this section.
	2. DELIVERY, STORAGE, AND HANDLING
		1. Delivery and Acceptance Requirements
			1. Deliver materials in original, factory-sealed, unopened containers with intact and legible product label and manufacturer name.
		2. Storage and Handling
			1. Store materials as recommended by the Roof Coating Manufacturer in a protected area and out of direct sunlight. Protect materials from rain and physical damage.
	3. SITE CONDITIONS
		1. Ambient Conditions
			1. Do not perform Work during rain or inclement weather.
			2. Do not perform Work on surfaces covered in frost, snow, or wet to touch.
			3. Do not perform Work over saturated insulation or saturated substrates.
			4. Do not perform Work when temperatures exceed product specific limitations. Refer to product specific technical data sheet for minimum application temperature.

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SPEC NOTE: Henry offers two warranty configurations. Select one of the following warranty terms. Delete sections not applicable to project specific conditions.

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* 1. WARRANTY
		1. Manufacturer Warranty
			1. Material Plus Warranty:
				1. Warrants product against product defect; provides material only for a period of [10] [15] [20] years from date of purchase.
			2. Gold Seal Warranty:
				1. Warrants system and installation; provides material and labor costs for repair for a period of [10] [15] [20] years from the date of installation completion as a result of any of the following:

Manufacturing product defect

Faulty Installer’s workmanship

1. **PRODUCTS**
	1. ASSEMBLIES
		1. Manufacturers
			1. Manufacturer list
				1. Henry® a Carlisle Company

336 Cold Stream Rd.

Kimberton, PA 19442

(800) 486-1278

[www.henry.com](http://www.henry.com)

* + 1. Performance Criteria
			1. Energy performance:
				1. Initial solar reflectance (ASTM C1549): 88%
				2. Solar reflective index (SRI): 111
				3. Thermal emittance (ASTM C1371): 0.90
				4. Meets California Energy Commission (CEC) Title Section 118(i)3
			2. FM approved (Class number 4470): Max Roof Slope: 5:12
			3. Florida product approval: Miami-Dade County, Florida NOA
			4. Tested fire response characteristics (ASTM E 108 or UL 790): Class A
			5. NSF Protocol P151: Tested and certified - system does not contaminate water
			6. Ponding water resistant
			7. Water leakage resistance (ASTM D7281): Pass (≥22 dry mils)
			8. Resistant to fungi, mold, and mildew
			9. Dirt pick-up resistance (MOT P-14): Pass
			10. Rain safe in 15 minutes
			11. Tack-free time: Approximately 1-2 hours
			12. Does not contain hydrocarbon solvents
			13. Does not contain calcium carbonate
			14. Does not require hazardous cleaners or solvents
			15. Volatile Organic Content (VOC): 10g/l max.

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SPEC NOTE: Contact Henry for additional roof coating color options. Custom color typical properties may vary.

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* + 1. Materials
			1. Roof coating
				1. Top coat

Solvent free one-component moisture curing silicone rubber roof coating, having the following typical properties:

Basis of design: Pro-Grade® 988 Silicone Roof Coating

Color: Bright White

Energy performance:

Initial solar reflectance (ASTM C1549): 88%

Solar reflective index (SRI): 111

Thermal emittance (ASTM C1371): 0.90

Meets California Energy Commission (CEC) Title Section 118(i)3

FM approved (Class number 4470): Max Roof Slope: 5:12

Florida product approval: Miami-Dade County, Florida NOA

Tested fire response characteristics (ASTM E 108 or UL 790): Class A

NSF Protocol P151: Tested and certified - system does not contaminate water

Ponding water resistant

Water leakage resistance (ASTM D7281): Pass (≥22 dry mils)

Resistant to fungi, mold, and mildew

Dirt pick-up resistance (MOT P-14): Pass

Rain safe in 15 minutes

Tack-free time: Approximately 1-2 hours

Does not contain hydrocarbon solvents

Does not contain calcium carbonate

Does not require hazardous cleaners or solvents

Volatile Organic Content (VOC): 10g/l max.

* + - * 1. Base coat

Solvent free one-component moisture curing silicone rubber roof coating:

Basis of design: Pro-Grade 988 Silicone Roof Coating

Color: Bright White, Tan, or Gray

* + - 1. Primer
				1. Single-coat adhesive designed for bonding un-vulcanized silicone elastomers to various substrates:

Basis of design: Pro-Grade941 Primer

* + - 1. Reinforcement
				1. Stich bonded, high performance fabric reinforcement sheet:

Basis of design: Henry 195 Polyester Fabric

* + - 1. Sealant
				1. Butter grade, one-part moisture cure sealant consisting of silicone rubber:

Basis of design: Pro-Grade 923 Butter Grade Silicone Roof Sealer

* + - * 1. Fibered grade, one-part moisture cure sealant consisting of silicone rubber:

Basis of design: Pro-Grade 957 Silicone Fibered Roof Sealer

* + - 1. Fastener sealer
				1. One-part, moisture-curing silicone sealant specifically designed to seal fasteners on low and semi-steep sloped metal roofs:

Basis of design: Pro-Grade 928 Pitch Pocket & Self-Leveling Roof Sealer

* 1. ACCESSORIES
		1. Rust inhibitor
			1. Contact Henry for a list of recommended products.
1. **EXECUTION**
	1. EXAMINATION
		1. Verification of Conditions
			1. Verify metal gauge thickness is in accordance with Roof Coating Manufacturer requirements.
			2. Verify substrates are in accordance with Roof Coating Manufacturer requirements and as specified in this Section prior to roof coating installation. Commencement of Work indicates installer acceptance of the substrate.
				1. Verify surfaces are sound, dry, clean, and free of oil, grease, dirt, excess mortar, frost, laitance, loose and flaking particles, or other contaminants.
				2. Verify substrates are continuous and secured.
				3. Verify metal seams and flashings, skylights, scuppers, gutters, penetrations, and structures located within area of Work are leak free and in good working condition.
				4. Verify metal seams are tight and flush.
				5. Do not install roof coating over rusted substrates.
			3. Previously coated areas
				1. Contact Roof Coating Manufacturer for previously coated examination procedures.
		2. Preinstallation Testing
			1. Moisture detection survey
				1. Visual inspection
			2. Adhesion test
				1. Complete an adhesion test over all substrates prior to installation of roof coating.

Submit passing adhesion test results to Roof Coating Manufacturer during warranty application process.

* + - * 1. Refer to Roof Coating Manufacturer’s application guide for adhesion test procedures.
				2. Allow roof coating to cure a minimum of 72 hours prior to conducting adhesion test.
		1. Evaluation and assessment
			1. Verify roof areas promote positive drainage. Contact Roof Coating Manufacturer for ponding area repair procedures.
	1. PREPARATION
		1. Protection of In-Place Conditions
			1. Protect areas and surfaces not included in scope of Work against damage or soiling.
			2. Secure protective coverings against wind and vent area if used in conjunction with applications preventing collection and moisture.
			3. Post signs noting potential overspray hazard within 400 feet (120 meters) of applications.
			4. Turn off air-intake ventilation equipment to prevent fumes from entering building.
			5. Post “No Smoking” signs near roof coating installation until vapors dissipate.
		2. Surface Preparation
			1. Surface Cleaning
				1. Remove mill oil and other contaminates that may inhibit adhesion.
				2. Confirm local ordinances and jurisdiction cleaning method restrictions.
				3. Do not to inject water into roofing substrate.
				4. Acceptable cleaning methods

Pressure washer with greater than 2000psi.

Air lance with greater than 2000psi.

Etching detergent and sprayer

Allow etching detergent to stand for 5 minutes. Lightly scrub with stiff bristle broom and remove with power washer using 3 to 4 feet (1 to 1.2 meters) arc pattern with recommended equipment.

Hudson type agricultural sprayer with greater than 2000psi

Conventional pressure sprayer with greater than 2000psi

Airless sprayer with greater than 2000psi

Algae, mildew, or fungus:

Treat with a tri-sodium phosphate (TSP) or equivalent non-filming detergent and water solution.

Clear water rinse until complete cleaning residue removal.

* + - 1. Repair, removal, and replacement of existing metal roofing
				1. Replace metal panels compromising structural integrity including damaged, weakened, or corroded panels, fascia, gutters, vents, ridge caps, and flashings. Contact Metal Roofing Manufacturer for repair, removal, and replacement of compromised material.
				2. Remove rust with wire brush, sandblast, or mechanically abrade until substrate is smooth and rust free.

Prime repaired substrates with rust inhibitor to protect previously rusted areas.

* + - * 1. Remove old and damaged mastic repairs at laps, seams, and fasteners.
			1. Fastener integrity
				1. Retighten or replace fasteners as required to obtain secure placement in accordance with Metal Roofing Manufacturer published literature.
				2. Stitch-fasten deflected metal panels together to ensure a continuous substrate eliminating gaps.
				3. Fasteners requiring replacement must use larger diameter fasteners than existing.
	1. INSTALLATION
		1. Roof coating may settle during storage. Mix roof coating prior to use with drill and mixer blade until consistent viscosity is achieved.
		2. Primer
			1. Non-coated surfaces
				1. Where adhesion is less than desired, apply primer in accordance with Roof Coating Manufacturer’s published literature.
			2. Previously coated surfaces
				1. No primer required where adhesion testing meets minimum requirements.
		3. Detailing and Flashing
			1. Install detailing and flashings per Roof Coating Manufacturer’s details and application guide.
			2. Refer to Roof Coating Manufacturer’s application guide for pretreatment of secure and intact metal seams, curbs, parapets, pipe penetrations, fastener heads, and drains.
		4. Roof Marking
			1. Measure and mark area prior to roof coating installation.
			2. Contact Roof Coating Manufacturer for roof marking instructions.
				1. Coverage rates are theoretical and do not account for material loss due to spraying, surface texture, and waste.
				2. Install a test patch to verify coating achieves millage requirements.
				3. Adjust application rates based on test patch results to meet specified requirements.
		5. Roof Coating
			1. Apply roof coating per Roof Coating Manufacturer minimum application rates.
				1. Refer to Roof Coating Manufacturer warranty chart for coverage rate options.
				2. Application rates apply to both Material Plus and Gold Seal Warranties.
	2. SITE QUALITY CONTROL
		1. Site Tests and Inspections
			1. Observe roof coating installation during the following phases:
				1. Substrate verification
				2. Roof coating installation start
				3. Final inspection of roof coating installation
	3. CLEANING
		1. Waste Management
			1. As the Work proceeds, and upon completion, promptly clean up and remove from the premises all rubbish and surplus materials resulting from the foregoing Work.
			2. Clean soiled surfaces, spatters, and damage caused by Work of this Section.
			3. Dispose of roof coating per local code ordinances.
	4. PROTECTION
		1. Protect roof coating from damage by other trades.
		2. Limit traffic on roof coated surfaces for a minimum of 2 days.

END OF SECTION